

CLAIMS

WHAT IS CLAIMED IS:

1. A printable, coated, biaxially oriented film, comprising:
 - (a) a base film having a first and a second side, said base film comprising polypropylene; and
 - (b) a urethane coating on said first side, said coating having been applied to said base film between a machine direction orientation and a transverse direction orientation of a two step tentering operation.
2. The film of claim 1, wherein the base film additionally comprises a base film antiblock agent.
3. The film of claim 2, wherein the base film antiblock agent is present at up to 1% by weight of the film.
4. The film of claim 2, wherein the base film antiblock agent is present at up to 0.5% by weight of the film.
5. The film of claim 2, wherein the base film antiblock agent is an antiblock agent selected from the group consisting of silica-based, silicone-based, and a blend of silica-based and silicone-based antiblock agents.
6. The film of claim 1, wherein the urethane coating comprises a waterborne urethane dispersion.

7. The film of claim 1, wherein the urethane coating comprises a waterborne urethane dispersion blended with waterborne acrylic dispersions.
8. The film of claim 1, wherein the urethane coating comprises a crosslinking agent.
9. The film of claim 8, wherein the crosslinking agent is present in the coating at up to 1% by dry weight.
10. The film of claim 8, wherein the crosslinking agent is polyfunctional aziridine crosslinking agent at up to 1% by dry weight of the coating.
11. The film of claim 1, wherein the urethane coating comprises a coating antiblock agent.
12. The film of claim 11, wherein the urethane coating comprises up to 1% coating antiblock agent based on dry component weight of the coating.
13. The film of claim 11, wherein the base film antiblock agent is an antiblock agent selected from the group consisting of silica-based, silicone-based, and a blend of silica-based and silicone- based antiblock agents.
14. The film of claim 1, including a surface treatment on the first side beneath the urethane coating.
15. The film of claim 14, wherein the surface treatment on the first side comprises an oxidative treatment.

16. The film of claim 1, including a surface treatment on the second side.
17. The film of claim 16, wherein the surface treatment on the second side comprises an oxidative treatment.
18. The film of claim 1, wherein the polypropylene is a polypropylene homopolymer.
19. The film of claim 1, wherein the polypropylene is a copolymer of propylene.
20. The film of claim 1, wherein the polypropylene is a blend of homopolymers and copolymers.
21. The film of claim 1, wherein the base film is a coextruded structure.
22. The film of claim 21, wherein the coextruded structure has at least three layers.
23. The film of claim 21, wherein the coextruded structure includes a core and at least one skin layer.
24. The film of claim 1, wherein the base film is an extruded film that has an additional layer added by extrusion coating.
25. A method for manufacturing a printable polypropylene film comprising the steps of:
 - (a) forming a base film comprising a substantially uniform film layer comprising polypropylene;

- (b) uniaxially orienting the base film by machine direction stretching of the base film;
 - (c) applying a coating of urethane to a first side of the uniaxially oriented base film;
and
 - (d) biaxially orienting the coated film by stretching the film transversely to the machine direction.
26. The method of claim 25, wherein the step of forming the base film comprises forming the base film comprising a base film antiblock agent.
27. The method of claim 25, wherein the step of forming the base film includes a step of forming the base film having a base film antiblock agent present at up to 1% by weight of the coating.
28. The method of claim 25, wherein the step of forming the base film includes a step of forming the base film having a base film antiblock agent present at up to 0.5% by weight of the coating.
29. The method of claim 26, wherein the base film antiblock agent is an antiblock agent selected from the group consisting of silica-based, silicone-based, and a blend of silica-based and silicone-based antiblock agents.
30. The method of claim 25, wherein the step of applying a coating comprises a step of applying a waterborne urethane dispersion.

31. The method of claim 25, wherein the step of applying a coating comprises a step of applying a waterborne urethane dispersion blended with waterborne acrylic dispersions.
32. The method of claim 25, wherein the step of applying a coating of urethane comprises a step of applying a coating of urethane having a coating crosslinking agent.
33. The method of claim 25, wherein the step of applying a coating of urethane comprises a step of applying a coating having a coating crosslinking agent present at up to 1% by weight of the coating.
34. The method of claim 25, wherein the step of applying a coating of urethane comprises a step of applying a coating of urethane having a polyfunctional aziridine crosslinking agent at approximately 1% by dry weight of the coating.
35. The method of claim 25, wherein the step of applying a coating comprises applying a urethane coating comprising a coating antiblock agent.
36. The method of claim 25, wherein the step of applying a coating comprises applying a urethane coating comprising up to 1% antiblock agent based on dry component weight.
37. The method of claim 25, wherein the base film antiblock agent is an antiblock agent selected from the group consisting of silica-based, silicone-based, and a blend of silica-based and silicone-based antiblock agents.

38. The method of claim 25, including a step of surface treating the first side prior to the step of applying the coating of urethane.
39. The method of claim 38, wherein the step of surface treating the first side includes oxidatively treating.
40. The method of claim 25, including the step of surface treating the second side.
41. The method of claim 40, wherein the step of surface treating the second side comprises oxidative treating.
42. The method of claim 25, wherein the step of forming the film base film comprising a substantially uniform film layer comprising polypropylene includes forming the base film comprising polypropylene homopolymer.
43. The method of claim 25, wherein the step of forming the base film comprising a substantially uniform film layer comprising polypropylene includes forming the base film comprising propylene copolymer.
44. The method of claim 25, wherein the step of forming the base film comprising a substantially uniform film layer comprising polypropylene includes forming the base film comprising a blend of homopolymers and copolymers.
45. The method of claim 25, wherein the step of forming the base film includes coextruding a base film.

46. The method of claim 25, wherein the step of forming the base film includes coextruding a three layer base film.

47. The method of claim 25, wherein the step of forming the base film includes coextruding a base film having a core and at least one skin layer.

48. The method of claim 25, wherein the step of forming the base film includes forming an extruded film that has an additional layer added by extrusion coating.